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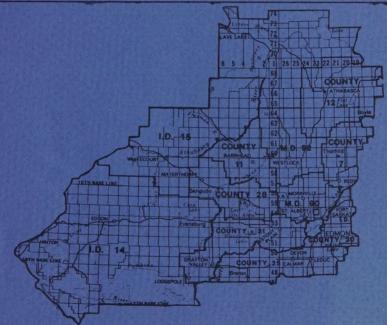


A CONSENSUS OF

COSTS AND RETURNS

GRAIN SILAGE
100 ACRES

320 ACRE FARM
STRATHCONA - LEDUC COUNTIES



NORTH WEST ALBERTA

MARKETING DIVISION - ALBERTA DEPARTMENT OF AGRICULTURE



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A CONCENSUS OF COSTS & RETURNS

FOR

GRAIN SILAGE PRODUCTION

100 Acres of Silage
Strathcona & Leduc Counties

Ву

Richard S. Andersen
Regional Farm Economist

The author wishes to acknowledge the assistance of the farmers in the Leduc and Strathcona counties who provided the basic data; Don Young and Don Christensen, D. A.'s of the respective counties who helped gather the data and assisted in the preparation of this report.

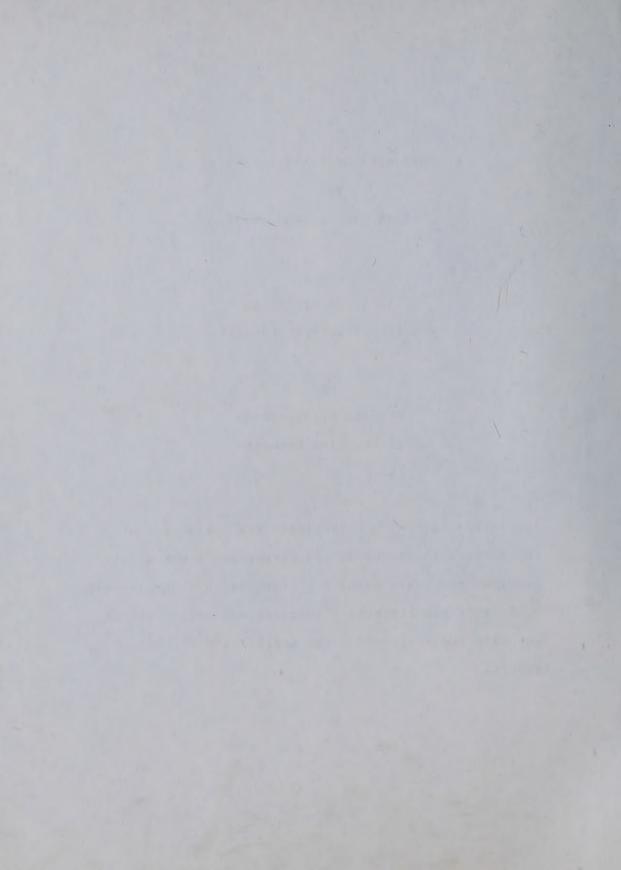


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INTRODUCTION

Today's farming demands that cost and return information be available for all alternatives which the producer could consider when planning future production. Narrowing profit margins have forced the farmer to keep a close eye on all production costs and expected returns. This report provides an estimate of the costs and returns of producing grain silage based on the concensus of a group of farmers in the Edmonton and Leduc districts.

OBJECTIVES

This report was prepared to provide an estimate of costs of production and the expected returns from a 100 acre oats/barley silage system. Such information can be an important guide in decision-making, but the reader should keep in mind that costs vary between producers because of differences in land and cultural practices. The farmer's own records are essential to determine what it actually costs to produce a crop on his particular farm.

This report can be useful for management decisions:

- 1. In selecting the enterprise or crop rotation yielding the highest returns.
- In determining the amount of cash required to operate during a season.
- 3. In determining the amount of time expected to be spent on an enterprise.
- For projecting the expense and income when considering new investments.requiring credit.
- 5. In determining how the expenses and receipts should be shared in rental arrangements.
- 6. To compare to actual costs incurred in your farming enterprises.

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SOURCE & METHOD OF DATA COLLECTION

Following the expression of local interest, a number of producers were contacted and asked to attend a one-day workshop at which they felt typically represented their production methods. The C. R. D. (Consensus Research Data) approach relies on this group participation to arrive at a consensus of opinion on production techniques, investment levels and costs. The data collected represents typical or most representative costs and returns rather than averages.

Staff from the Alberta Department of Agriculture are present at the workshops to guide the discussion and assist in the collection of data. After the raw data is assembled at this meeting, further calculations and documentation are carried out. Each producer who participates at the workshop has the opportunity of reviewing the material prior to publication.

ASSUMPTIONS SPECIFIC TO THIS STUDY

1. The farm consisted of 320 acres in the following rotation:

Silage		100
Grain		150
Forage		50
Native	Pasture	2.0

- 2. Annual use of machines was based on the above cropping pattern.
- 3. Yield per acre was based on averages expected by the producers with the inputs and operations described in the cost operations:

Crop	<u>Yield</u>	Value
Grain Silage	6 Tons (wet basis)	\$7.00/ton

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ASSESSMENT OF DISTRICT OF THE STREET

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4. Seeding rate and estimated cost:

Crop			Rate	Price	Cost
Barley		3/4	bu./acre	\$1.25/Bu.	\$.94/acre
Oats	1	3/4	bu./acre	\$1.00/Bu.	\$1.75/acre

5. Fertilizer rate and cost:

Type	Rate	Price	Cost
34-0-0	lbs/acre	\$68.00/ton \$105.00/ton	\$5.10/acre \$2.65/acre

6. Weed control costs:

Type	Rate	Price	Cost
MCPA	6oz/acre	\$0.08/oz	\$0.48/acre

- 7. Value of land \$175/acre; and taxes at \$2.25/acre.
- 8. Interest rates: Machinery 7½%; Real Estate 7%.
- 9. Labor: \$2.50/hour all labor including owner's and hired.
- 10. Hauling based on total miles required to haul silage from field to silo.
- 11. Tractor and machine operating costs are based on information provided by the Alberta Department of Agriculture.
- 12. Storage structure used was a concrete silo with 600 ton capacity.
- 13. Storage costs do not reflect costs for visible and invisible silage losses.
- 14. Harvest and operator labor costs were adjusted linearly for yield variations above and below the 6 tons per acre as reported in Table B. For example, the costs for 7 tons per acre were calculated as follows:

Cash Harvest cost/acre = (7/6) X \$6.92 = \$8.07 Operator's Labor cost/acre = (7/6) X \$1.67 = \$1.95



TABLE 1

Summary of Consensus Report Costs and Returns at 6T/Acre Yield

Cash Cultural Costs Cash Harvest Costs at 6T/Acre Cash Overhead Costs	Per Acre 14.14 6.92 2.96	Per Ton 2.36 1.15 0.49
Total Cash Costs	24.02	4.00
Non-Cash Overhead Operator's Labor at 6T/Acre	50.11 2.26	8.35 0.38
Total Costs	76.39	12.73
Expected Returns (6 Tons @ \$7.00)	42.00	7.00
Gross Cash Margin	17.98	2.86
Returns to Risk and Management	-34.39	-5.73
Return to Operator's Labor, Risk and Management	-32.13	-5.36
Return to Land, Operator's Labor, Risk & Management	-19.88	-3.31

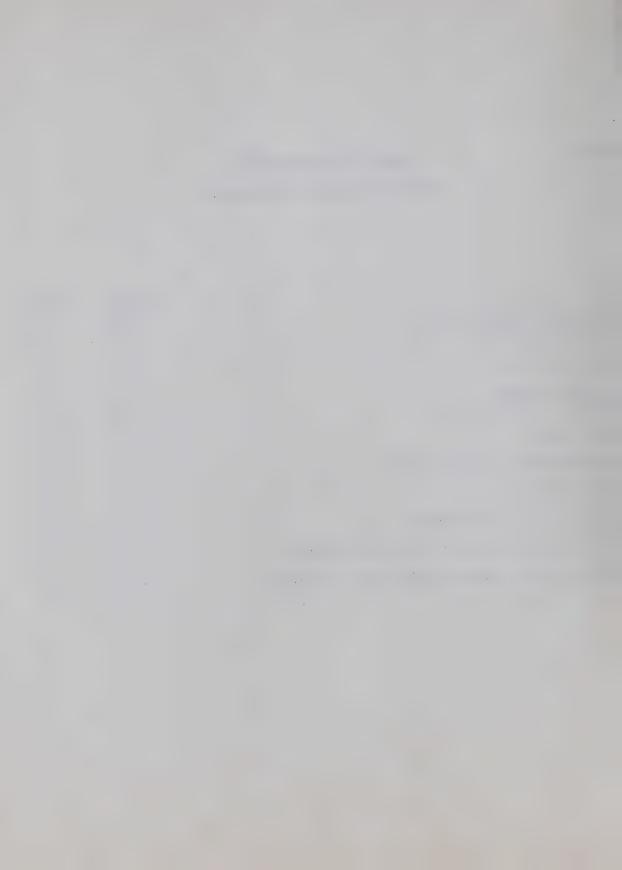


TABLE 2

Gross Returns and Costs Per Acre

At Various Yields and Prices

Crop Grain Silage	Yield Ton Per Acre													
Area Strathcona/	-30%	-20%	-10%	Average	+10%	+20%	+30%							
Leduc	4.2	4.8	5.4	6	6.6	7.2	7.8							
Price per Ton														
6.00	25.20	28.80	32.40	36.00	39.60	43.20	46.80							
6.25	26.25	30.00	33.75	37.50	41.25	45.00	48.75							
6.50	27.30	31.20	35.10	39.00	42.90	46.80	50.70							
6.75	28.35	32.40	36.45	40.50	44.55	48.60	52.65							
7.00	29.40	33.60	37.80	42.00	46.20	50.40	54.60							
7.50	31.50	36.00	40.50	45.00	49.50	54.00	58.50							
8.00	33.60	38.40	43.20	48.00	52.80	57.60	62.40							
8.50	35.70	40.80	45.90	51.00	56.10	61.20	66.30							
9.00	37.80	43.20	48,60	54.00	59.40	64.80	70,20							
Cash Cultural Costs	14.14	14.14	14.14	14.14	14.14	14.14	14.14							
Cash Harvest Costs	4.84	5.54	6.23	6.92	7.61	8.30	9.00							
Cash Overhead Costs	2.96	2.96	2.96	2.96	2.96	2.96	2.96							
Total Cash Costs	21.94	22.64	23.33	24.02	24.71	25.40	26.10							
Non-Cash Overhead	50.11	50.11	50.11	50.11	50.11	50.11	50.11							
Operator's Labor	1.57	1,81	2.03	2.26	2.49	2.72	2.95							
Total Costs	73.62	74.56	75.47	76.39	77.31	78.23	79.16							

DUCTION ECONOMICS BRANCH



ECONOMICS DIVISION



821-A

C.R.D. No. 821-B

PRODUCTION COSTS

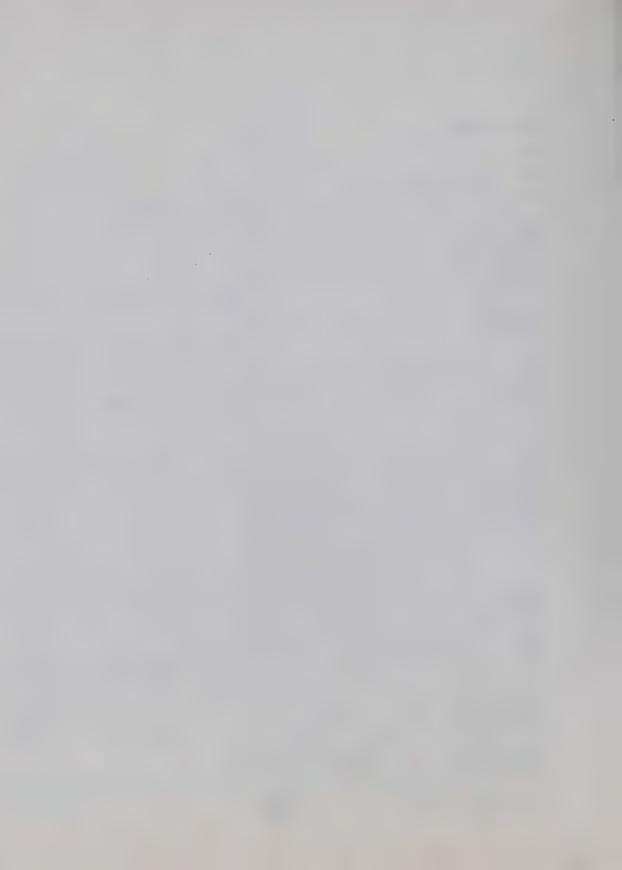
Consensus Cols. - 1, 7, 8, 9

CROPS & FORAGE

Date November 29/71

Consensus Cols 1,	7, 8, 9			CKO	S & FUKA	(GE)				
County Strathcona			G1	ain Si (Crop)	lage	100 (Acres)		Don Yo Don Ch	1127 0	
(1)	(2)	(3)	(4)		(6)	(7)	(8)	(9)	(10)	(11)
	Hours P	er Acre			Cash Fuel &	and Labor Cos				Total
OPERATIONS	Equip.	Labor	Operator	Hired	Repairs	Kind	Materials Quantity	Cost/Unit	Cost	Cost Per Ac.
Cultural			\$	\$	s			s	\$\$	S
H.D. Cultivator	.400	.400		1.00	.58					1.58
D. Disc & Harrows	s .222	.222		.56	.32					.88
D.D. Press Drill	.182	.182	.46		.27					.27
						Oats 1 3	/4 bu. @	\$1.00	1.75	1.75
						Barley 3	/4 bu. @	\$1.25	.94	.94
Fertilizer								;		
Broadcast	.050	.050		.13	.06	·				.19
						34-0-0 15	0# @ \$68	1/ton	5.10	5.10
						11-48-0 5	0# @ \$105	/ton	2.65	2.65
Harrow	.059	.059		.15	.07					.22
Spray .	.050	.050	.13		.08					.08
						MCPA	6 oz. @.	08c	.48	.48
•										
			(.59				CASH CULTI	IRAL COSTS		14.14
Harvest 1 cutting	ıs									
Swather (S.P.)	.146	.146	-	.37	.28					.65
Harvestor	.667	.667	1.67		1.34					1.34
Silage Wagons 2	.667	.667		1.67	1.14					2.81
Blower	.521	.521		1.30	.82					2.12
BIOMEI		1024		1.30	.02					6946
		1								
					1					
			(1.67)		1		CASH HARV	EST COSTS		6.92
Cash Overhead			1 = 0 , /				I CHAIL HARV	L31 C0313		
Phone \$ 5 Crop In	C	c	Stationa		٠ 3					.08
Taxes 2.25 Years a		3	Stational	y, etc.	3					2.25
Rent \$ Average		ina Canit	al at 8	% \$100	0 for 1	·				.40
Building Insurance \$							0			.23
bullating Insurance 4		3001 11150	Trance 3_	naci	intery in	isurance 32200	CASH OVER	HEAD COSTS		2.96
				(5)	(6)	Overhead	CASH OVER	HEAD COSTS	(10)	2.90
TOTAL CASH COSTS/ACRE										27.02
)E .		5.18	4.96	2.96			10.92	24.02
EXPECTED CASH RETURNS	TER ALK	(E								42.00
LABOR/HOUR		-	RI	ETURNS/A	CRE		GROSS CAS	H MARGIN		17.98
			Cros	VI.a.1.	d V-1	ue l				
Operator - \$ 2.50 Skilled - \$ 2.50		SI	Crop Llage	Yiel 6 to	d Val ns@ \$7. @ \$					





PRODUCTION COSTS

821-A

	Contraction of the Contraction o
CROPS & FORAGE	(10)
,	Total Co Per Acr \$
TOTAL CASH COSTS PER ACRE (821-A, page 1), columns 5 + 6 + 10	24.0
AV. INVESTMENT PER ACRE TO STUDY CROP FIXED COST PER AC	RE
Item Per Acre Depreciation	Interest
Land \$ 175 \$ \$	12.25
<u>Crop Supplies</u> <u>5 .08</u> <u>8ulldings</u> 75 3.00	5.25
8uildings 75 3.00 Equipment 168 19.53	5.25 10.15 8.2 29.1
Total	
NON-CA	SH OVERHEAD 50.1
OPERATO	OR'S LABOR 2.2
TOTAL NON-CASH COSTS PER ACRE	:::::52.:3
(A) TOTAL COSTS PER ACRE	76.
- Operator's Labor	
(B) = Total Cost less Operator's Labor	
- Interest on Land	
(C) = Total Cost less Operator's Labor and Interest on Land . \$ 61.88	
(D) EXPECTED GROSS RETURNS PER ACRE	42.0
RETURNS TO OPERATOR'S LAND, LABOR AND MANAGEMENT (D-C)	3,91
RETURNS TO OPERATOR'S LABOR AND MANAGEMENT (D-B)	+32.1

Table B

RETURNS PER ACRE TO OPERATOR'S LAND, LABOR AND MANAGEMENT AT VARIOUS YIELDS AND PRICES

COSTS PER UNIT (e.g. Bu.) AT VARIOUS YIELDS

			1211 01111 (01	9. 0017	TAILTOOD TILL			
	Crop Grain Silage			Yield	Ton Pe	er Acre		
	Area Strathcona/	-30%	-20%	-10%	Average	+10%	+20%	+30%
	Leduc	4.2	4.8	5.4	6	6.6	7.2	7.8
	Price per Ton							
	6.00	-34.60	-31.70	-28.89	-25.88	-22.97	-20.06	-17.16
ACRE	6.25	-33.55	-30.50	-27.44	-24.38	-21.32	-18.26	-15.21
ER AC	. 6.50	-32.50	-29.30	-26.09	-22.88	-19.67	-16.46	-13.26
م	6.75	-31.45	-28.10	-24.74	-21.38	-18.02	-14.66	-11.31
RETURNS	7.00	-30.40	-26.90	-23.39	-19.88	-16.37	-12.86	- 9.36
RET	7.50	-28.30	-24.50	-20.69	-16.88	-13.07	- 9.26	- 5.41
	8.00	-26.20	-22.10	-17.99	-13.88	- 9,77	- 5.66	- 1.56
	8.50	-24.10	-19.70	-15.29	-10.88	- 6.47	- 2.06	2.34
	9.00	-22.00	-17.30	-12.59	- 7,88	- 3,17	1.54	6.24
	Cash Cultural Costs	3.37	2.95	2,62	2,36	2.14	1.96	1.81
	Cash Harvest Costs	1.15	1.15	1.15	1.15	1.15	1.15	1.15
TON	Cash Overhead Costs	.70	.62	.55	.49	.45	, 41	.38
ŀ	Total Cash Costs	5.22	4.72	4.32	4.00	3.74	3,52	3.34
PER	Non-Cash Overhead	11.93	10,44	9.28	8.35	7.59	6.96	6.42
STS	Operator's Labor	. 38	.38	.38	.38	.38	.38	. 38
ວ	Total Costs	17.53	15.65	13.98	12.73	11.71	10.86	10.14
		17.22		13.90	14.01)	11./1	10.00	10.14



1	en				. ,																										
Andersen	Christensen (16)		Hour	Total	7 1.43	1.69	1,45	1.26	1.68	1.89	2.01	1.71	1.71		1.57			1.26	1.28	1.09			(0)	Acres	Acres	Acres	Acres	Acres	Acres		IVISION
R.S. Ande	15)	1011		Repairs	\$.17	.43	.36	.17	.40	1.13	.75	.43	.43		.48			.33	.28	.33			Cropland Acres	100	150	50		ed 20	320		ECONOMICS DIVISION
Ec.	0. Yo		Cas	Fuel	7	1	1	1	1	92.	;	1	-		-			.93	1.00	92.			Crople	Silage	Grains	Pasture	Native	Uncultivated	Total		ECO
Req	D.A.		A	Hour	5.0	4.5	5.5	17.00	20.00	7.00	1.50	.75	.75		1.50			1	-	1	-		Ц	S	Gr	Pa	N N	5			
	(12)	Study Crop	Power	Н.Р.	70	70	09	9	40	;	70	40	40		. 09			70	40	09				_	00	.58	00	50	25		
	(11)	Stuc	Costs/Ac.	Int.*	.25	.30	04.	141.	F	66.	1.44	1.03	1.03		,62			2.44	0.58	0.82		1	F	lotal	1225.00	21.	825.00	2990.50	5062.25		
	100		Annual Co	Deprec	.36	.65	.43	.15	.12	2.16	6.30	1.50	1.50		.90			3.50	0.70	1.26		l age	Acres	Other	S.						
SCHEDULE	Acres (9)		-	Int.*	25 3	30	40	14	=	66	144	103	103		62			244	53	82		(Crop)	100 Ac	Other	<i>γ</i> -	.75		22.50	23.23		
	Silage (8)		Annual	eprec.	36 3	65	43	15	12	216	630	150	150		90			350	70	126	avas	- CNO	Costs on_	Int.*	1225.00 \$	12.50	525.00	1015.00	2778.00		
INVESTMENT	ain Si	1:	Yrs.		15	10	20	20	20	20	5	15	15		15			10	12	10	CTIIDV		Fixed Co		XX S	8.33	00				
	P Grain	10		9	40	40	40	40	40	40	100	100	100		100		~	50	20	20	TC TO		L	Deprec	× v	ω	300.00	1953.00	2261.00		
	Crop (5)	CropsStudy	Cove	Acres	200	100	100	200	100	100	100	100	100		100		HRS/ YEAR	11	75	71	STOUJ US		Life	Yrs.	×	×	20	×			
. 13, 14.	(4)	All Crops	Coverage	Acres	500	250	250	500	250	250	100	100	100		100		HRS/ YEAR	222	375	355	CHYEN	<u> </u>	% to	Crop		33	100	××			
5. 7. 12.	(3)	1	Value	4	3. 150	180	240	85	65	009	350	250	250		150			3000	1800	2700	-ku +	7	Ave r age	Value	\$175000	500	7500	16827		7 %	
5	duc (2)		Price		1500	1800	2400	850	650	0009	3500	2500	2500		1500			10000	0009	9000	ient 7½	חוום ולוווס	Cost	Price						ldgs.	BRANCH
-	ma/Le		Size		12	12	12	30"	40,	14"	Med	5T	· 5T								quipm	ble.			\$	100	rete			nd, b	OMICS
C.R.D. No. 821 -	County Strathcona/Leduc		EQUIPMENT		H.D. Cultivator	Double Disc	DD Press Drill	Harrow Diamond	Sprayer	Swather S.P.	Harvester	Silage Wagon	Silage Wagon	Blower, Pipes,	Spreader			Tractor 70 HP D	Tractor 40 HP G	Tractor 60 HP D	threrest on Equipment 71/2	where applicable	LAND, BUILDINGS	EQUIPMENT, ETC.	Land (Years)	Supplies, Shop, Tools	Buildings Concrete	Equipment	TOTAL	Interest on land, bldgs.	PRODUCTION ECONOMICS BRANCH
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